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The Lack of Association between Angiotensinogen Gene Variants and Ambulatory Blood Pressure in Young Normotensive Men: Findings from a Genetic Study

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Introduction

The angiotensinogen gene, located on chromosome 1q42-43, codes for the precursor protein angiotensinogen, which is involved in the renin-angiotensin-aldosterone system (RAAS). This system plays a critical role in regulating blood pressure and fluid balance in the body. Variants in the angiotensinogen gene have been studied extensively for their potential association with hypertension, a major risk factor for cardiovascular disease (CVD). Two of the most well-studied variants are T174M and M235T, which are single nucleotide polymorphisms (SNPs) that result in amino acid substitutions in the angiotensinogen protein. The T174M variant is a threonine-to-methionine substitution at position 174 of the angiotensinogen protein, while the M235T variant is a methionine-to-threonine substitution at position 235. These variants have been shown to affect the levels of angiotensinogen in the blood and to alter the activity of the RAAS. Studies investigating the potential association between T174M and M235T variants and hypertension have produced mixed results. Some studies have reported a significant association between these variants and hypertension, while others have not found any association.

Description

One study aimed to evaluate the potential association between ambulatory blood pressure and the T174M and M235T variants in a random sample of young normotensive men. The study found that these variants had no major influence on ambulatory blood pressure in young normotensive subjects. This suggests that the T174M and M235T variants may not be major contributors to hypertension risk in this population. Other studies have investigated the potential association between these variants and other cardiovascular outcomes, such as myocardial infarction and stroke. Again, the results have been mixed, with some studies reporting a significant association and others not finding any association. Variants in the angiotensinogen gene, particularly T174M and M235T, have been studied for their potential association with hypertension and other cardiovascular outcomes. While some studies have reported a significant association, others have not found any association. Further research is needed to fully understand the role of these variants in hypertension and CVD and to determine their potential clinical implications.

Ambulatory blood pressure monitoring (ABPM) is a non-invasive method of monitoring blood pressure over a 24-hour period. This technique allows for the measurement of blood pressure during a subject's normal daily activities, providing a more accurate assessment of blood pressure than a single office visit. Studies have shown that ambulatory blood pressure (ABP) is a better predictor of cardiovascular disease (CVD) risk than office blood pressure measurements. ABP has also been shown to be a stronger predictor of target organ damage, such as left ventricular hypertrophy, than office blood pressure. A study was conducted to evaluate ABP in a random sample of young normotensive men (n = 145). The study aimed to investigate the potential association between ABP and two molecular variants of the angiotensinogen gene, T174M and M235T.

The results of the study showed that ABP levels did not vary according to T174M and M235T genotypes. When the subjects were grouped according to their blood pressure level, as indicated by tertiles of their 24-hour ABP, no significant differences in allele frequencies between the three groups were found. This suggests that the T174M and M235T molecular variants of the angiotensinogen gene have no major influence on ABP in young normotensive subjects. These findings have important implications for the management of hypertension and CVD risk in young individuals. ABPM can be a useful tool in identifying individuals who are at increased risk of CVD, even if they have normal office blood pressure readings. This can help healthcare professionals to identify and intervene in high-risk individuals earlier, potentially reducing the risk of future cardiovascular events.

In addition, these findings suggest that genetic factors may play a limited role in determining ABP in young normotensive individuals. This highlights the importance of lifestyle factors, such as diet and physical activity, in the development and prevention of hypertension and CVD. ABPM is a valuable tool for assessing blood pressure and predicting CVD risk in young normotensive individuals. The T174M and M235T molecular variants of the angiotensinogen gene have been shown to have no major influence on ABP in this population. Further research is needed to fully understand the genetic and environmental factors that contribute to hypertension and CVD risk in young individuals.

Ambulatory blood pressure monitoring (ABPM) is a valuable tool in the diagnosis and management of hypertension, a leading cause of cardiovascular disease (CVD). ABPM allows for the measurement of blood pressure over a 24-hour period, providing a more accurate assessment of blood pressure than traditional office measurements. The renin-angiotensin system (RAS) plays a key role in regulating blood pressure and genetic variants in the RAS genes have been implicated in the development of hypertension. Two molecular variants of the angiotensinogen gene, T174M and M235T, have been shown to influence blood pressure in some populations.

A study was conducted to investigate the potential association between these two angiotensinogen gene variants and ABP in a random sample of young normotensive men (n = 145). The study utilized restriction digests of a mispairing polymerase chain reaction product to detect the two point mutations and 24-hour ABPM was performed using a SpaceLabs 90207 device. The results of the study showed no significant differences in ABP levels according to T174M and M235T genotypes. When the subjects were grouped according to their blood pressure level, as indicated by tertiles of their 24-hour ABP, no significant differences in allele frequencies between the three groups were found. This suggests that the T174M and M235T molecular variants of the angiotensinogen gene have no major influence on ABP in young normotensive men.

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These findings have important implications for the management of hypertension and CVD risk in young individuals. ABPM can be a useful tool in identifying individuals who are at increased risk of CVD, even if they have normal office blood pressure readings. However, these results suggest that genetic factors may play a limited role in determining ABP in young normotensive individuals. Further research is needed to fully understand the genetic and environmental factors that contribute to hypertension and CVD risk in young individuals. While these two angiotensinogen gene variants did not appear to be associated with ABP in this study, other genetic factors may still play a role in the development of hypertension and CVD [1-5].

Conclusion

This study found no significant association between the T174M and M235T molecular variants of the angiotensinogen gene and ABP in young normotensive men. These findings suggest that lifestyle factors may be more important than genetic factors in determining blood pressure in this population, highlighting the importance of healthy lifestyle choices in the prevention of hypertension and CVD.

Acknowledgement

None.

Conflict of Interest

None.

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